

**REMARKS**

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and the reasons which follow.

Claims 27, 28, 31-38 are currently being amended.

New claims 40-44 are currently being added.

Claims 2, 5-15, 18-26, and 29-30 are cancelled.

Claims 1, 3, 4, 16-17 and 39 are withdrawn.

After amending the claims as set forth above, claims 27, 28 and 31-38 and 40-44 are pending in this application. Because the foregoing amendments do not introduce new matter, entry thereof by the Examiner is respectfully requested.

**Rejection under 35 USC § 112, first and second paragraphs**

Claims 2, 5-8, 18, 19, 31-38, and 40 are rejected for alleged lack of enablement under 35 § U.S.C. 112, first paragraph. Applicants respectfully traverse this rejection.

As stated above, claims 2, 5-7, 18 and 19 have been cancelled. Further, in accordance with the Examiner's comments in the Office Action of August 26<sup>th</sup>, Applicants have amended claim 31 to accurately reflect the method of protein engineering disclosed in the specification. Amended claim 31 recites the additional steps of:

- (iv) identifying the amino acid residue(s) of the framework protein hit identified at step (iii) that structurally correspond(s) to each of the two or more amino acid residues of said sample protein used to create the query at step (ii); and
- (v) determining which amino acid residue(s) identified at step (iv) is/are to be substituted by another amino acid to impart a particular property, characteristic or function to the framework protein identified as a hit.

The addition of the above steps in claim 31 reflects that the engineering of the protein takes place after the query and search steps as described in the specification at page 39, example

4. Applicants believe that this amendment satisfies the Examiner's enablement concerns by claiming a method of protein engineering analogous to the method disclosed in the specification. Support for this amendment can generally be found at page 22, line 26, to page 23, line 10, and at page 30, line 25, to page 31, line 4. The generic language "to impart a particular property, characteristic or function" is specifically found at page 22, lines 26-28.

Minor amendments were made to dependent claims 32 and 33 to correlate with the amendments made in claim 31.

Claims 34-36 have been amended to more explicitly state that the engineered proteins are determined to have the desired greater structural similarity, stability, or function as these are the characteristics intentionally engineered into the protein. That is, determining "whether" the engineered protein has these characteristics is not really the point of these claims.

Applicants have also sought to introduce new claim 41 to emphasize that it is not only the structurally related amino acids that can be substituted but also other amino acids can be substituted. For example, these additional substitutions could increase stability while not necessarily increasing the structural similarity of the hit to the sample protein. Support for this claim can be found by reading, in particular, the passages at page 22, lines 14-26.

New claim 42 is a corollary of claim 33 and recites that the substituted amino acids of the modified hit may be non-contiguous in primary sequence.

New claims 43 and 44 are simply former claims 16 and 17 redrafted to be dependent on independent claim 31.

#### **Rejection under 35 USC § 102(b)**

##### **Lauri et al., J. Comp. Aid. Mol. Des. (1994)**

The Examiner has maintained her rejection of former claims 27-30 under 35 § U.S.C. 102(b) as anticipated by Lauri et al. Applicants traverse this ground for rejection.

Applicants have amended claims 27 and 28 and cancelled claims 29-30.

In the office action of August 26, 2003, the Examiner suggested that if claim 27 was amended to exclude comparisons using binned and indexed vectors, this claim would be novel over Lauri et al.

Accordingly, applicants have amended claim 27 so that it (ii) effectively excludes comparisons using binned and indexed vectors. As Lauri et al. does not teach or suggest the claimed invention, withdrawal of this ground for rejection is respectfully requested.

## CONCLUSION

The present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

If any fees are due in connection with the filing of this Amendment, please charge the fees to our Deposit account No 19-0741. If a fee is required for an extension of time under CFR § 1.136 that is not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Date

Dec 29, 2003

Respectfully submitted,

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